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Olin CHEMICALS
P.O. BOX 248, 1186 LOWER RIVER ROAD, CHARLESTON, TN 37310
Phone: (615) 336-4000

December 21, 1993

VIA FEDERAL EXPRESS

Kenneth A. Lucas
Senior Remedial Project Manager
United States Environmental Protection Agency
345 Courtland Street Northeast
Atlanta, Georgia 30365

Re: Revised Section 6 of RI Report
Olin Chemicals/McIntosh Plant Site
McIntosh, Alabama

Dear Mr. Lucas:

By letter of December 14, 1993, Olin responded to part of your letter of December 6, 1993, which conveyed EPA's comments on the Final Remedial Investigation (RI) report submitted by Olin on July 30, 1993. This letter, with its attachment and enclosures, completes Olin's response. Attachment 1 provides a response to each of EPA's comments in Appendix A of the December 6 letter. These responses describe how Section 6 of the RI report was revised in accordance with EPA's comments.

Your letter directed Olin to submit only a revised Section 6, Baseline Risk Assessment, and appropriate appendices. You and I agreed in telephone conversations on December 10 and 20 that changes in Section 6 needed to be incorporated into the Executive Summary and Section 7 of the RI report. Accordingly, the enclosures to this letter include five unbound copies of the following: a revised Table of Contents and Executive Summary; Section 6 as revised in accordance with EPA's comments; Section 7 as revised; and Appendix N of Volume II of the RI report as revised. The enclosures consist of all pages between report tabs to facilitate updating the RI report. Remove all pages behind the following report tabs: Table of Contents, Section 6, Section 7, and Appendix N. Insert the enclosed replacement pages for each of these tab sections.

Olin reiterates its strong belief that the future on-site residential scenario will never occur. Olin agreed to include this scenario to provide information to risk managers about the range of risks that could occur if the site were ever allowed to become

residential. Olin does not believe remedial decisions should be based on this scenario because it will never happen.

Please let me know if you have any questions.

Sincerely,

OLIN CORPORATION

J. C. Brown
Manager, Environmental Technology

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Attachment and Enclosures

cc: W. A. Beal
D. E. Cooper (2)
L. S. Casteel (w/o att.)
A. S. Karlin
W. G. McGlasson (w/o att.)
T. B. Odom

Attachment 1

Outline of Olin's Responses to
EPA's December 6, 1993, Comments on
Final Remedial Investigation Report (7/30/93)
Olin Chemicals/McIntosh, AL Site

The following responds to each of EPA's comments and provides a description of how Section 6 of the Final Remedial Investigation Report was revised in accordance with these comments. EPA's comment is restated, followed by Olin's response.

Sections 6.3.5, 6.8, 6.9.5 - Remedial Goal Options

RGOs must be developed by rearranging the site-specific average-dose equation used in the baseline risk assessment to solve for the concentration term; RAGS Part B is not appropriate at this stage in the risk assessment process.

Remedial goal options (RGOs) are not the same as preliminary remediation goals (PRGs). Preliminary remediation goals are established at scoping for toxic substances known to be present at the site. Calculation of PRGs should be done in accordance with "Risk Assessment Guidance for Superfund: Volume I - Human Health Evaluation Manual, Part B. Development of Risk-based Preliminary Remediation Goals."

Response 1. This comment was based on Olin's retention of the Preliminary Remediation Goal (PRG) terminology from the work plan. In fact, Olin had calculated the concentrations as directed by EPA, but had not revised the terminology to the correct Remedial Goal Options (RGO). Section 6 was revised to use RGO-terminology when referring to goals calculated by rearranging the site-specific average dose equation and solving for the concentration term and to delete the reference to RAGS Part B.

Section 6.4.2, Identification of Chemicals of Potential Concern, page 6-7

Paragraph 3 should be changed to reflect that potential exposure scenarios are not of concern in the selection of chemicals of potential concern. Data summary tables must be presented for all media sampled; surface soil is noticeably absent from the list of media presented in paragraph 3.

Response 2. The revisions were made in accordance with EPA's comment.

Section 6.4.2.2, Chemicals of Potential Concern, OU-2 Surface Water, page 6-11

The basis for the statement that arsenic is present at levels that approximate background concentrations at the site is unclear. Background data must be included in Table 6-3. Clarify the reference for background concentrations at the site.

Response 3. The reference to "background" was omitted. This reference simply indicated that it was conservative to retain arsenic as a chemical of potential concern for surface water. It had no bearing on retaining arsenic.

Section 6.4.2.2, Chemicals of Potential Concern, Other Media, page 6-11

Tabulate surface soil data similar to that of other media.

Response 4. Table 6-5a, presenting surface soil data, was included. A brief paragraph was added to the text discussing the chemicals of potential concern for OU-2 surface soils in a manner that chemicals were discussed for other media.

Section 6.5.1.3, Potential Receptor Populations, page 6-14

Evaluation of onsite soil exposures should be added to the end of the first paragraph. The second paragraph of this section should be revised to more clearly present the receptor populations. As stated previously, the child scenario should be for a child aged 0 to 6 years.

Response 5. The revisions were made in accordance with EPA's comment.

Section 6.5.1.4, Exposure Points, page 6-15

Much of the information included in this section is relative to uncertainties involved in the risk assessment process. These discussions should be moved to the uncertainties section.

Response 6. EPA and Olin did not discuss precisely what information EPA thought should be moved. Olin understood EPA's comment and moved what we believe to be the appropriate information to the uncertainties section.

Section 6.5.2, Exposure Point Concentrations, pages 6-21 through 6-25

The first bullet in this section states that wells considered non-potable were included in the assessment; it should be noted that the facility considers these wells non-potable due to chloride contamination from site related activities.

The 10 percent adjustment factor applied to the mercury exposure point concentration, in the second bullet, to account for the limited time any industrial worker would be present in the area of mercury contamination should be removed from this bullet. It is not appropriate to adjust the concentration relative to exposure duration or frequency issues; these adjustment should be in the intake equation and not in the exposure point concentration. Similarly, the exposure point concentrations for dermal exposures to surface water, domestic well water, and groundwater should not be calculated using chemical-specific dermal permeability constants; the chemical-specific dermal permeability constants should be used in the intake equation. The chemical-specific dermal permeability constants referenced to Appendix N4 in missing. They must be included in the revised document.

Response 7. The reference to "non-potable" was qualified in accordance with EPA's comment and subordinated in a footnote, rather than the main text.

The discussion of the adjustment factor for industrial workers was deleted from the second bullet. The discussion of using chemical-specific dermal permeability constants was likewise removed from the last paragraph of Section 6.5.2. These calculations were properly included in the intake equations, but the discussion was inappropriately included in Section 6.5.2. The chemical-specific dermal permeability constants were listed in Section 6.5.3.2.4 (Bullet 4).

Section 6.5.3.2.3, Groundwater Ingestion Exposure Assumptions, page 6-28

Assumptions for the average scenario are more appropriately presented in an appendix rather than the main body of the report.

Response 8. The revisions were made in accordance with EPA's comment.

Section 6.5.3.2.4, Dermal Exposure Assumptions, pages 6-28 through 6-31

The application of the dermal permeability constants, listed in bullet 4, to the calculation of chemical intakes is not clear. Appendix N4 indicates that a permeability constant of 1 was used in the intake factor equation for adult dermal contact with domestic well water and a permeability constant of 0.015 was used for adolescent dermal contact with surface water. Additionally, these values should be referenced.

Much of the information presented in bullet 5 should be moved to the uncertainties section of the document. Bullet 8 should be removed from the text since matrix effect factor is included in the absorption factors of 1.0% for organics and 0.1% for inorganics.

Response 9. The application of dermal permeability constants to the calculation of chemical intakes was clarified, and the text and Appendix N4 were made consistent. The dermal permeability constants were referenced in Section 6.5.3.2.4 (Bullet 4).

Regarding bullet 5, EPA and Olin did not discuss precisely what information EPA thought should be moved. Olin understood EPA's comment and moved what we believe to be the appropriate information to the uncertainties section. Bullet 8 was removed from the text.

Section 6.5.3.2.5 Soil Ingestion Exposure Assumptions, page 6-31

The soil ingestion rate for adults in the residential scenario should be 100 mg/day not 50 mg/day. As previously stated, young children (0-6 years) must be evaluated for the future residential on-site scenario. The child ingestion rate should be 200 mg/day for a child aged 0 to 6 years. By presenting the child as aged 0 to 20 the childhood ingestion of 200 mg/day is diluted over 20 years resulting in a much lower HI for soil ingestion. For example, the HI for ingestion of surface soil from OU-1 for the RME scenario increased from 2 to 5 by eliminating the 20 year dilution.

Response 10. The revisions were made in accordance with EPA's comment.

Section 6.5.4.2.6 Fish Ingestion Exposure Assumptions, page 6-35

The matrix effect must be eliminated from the fish ingestion exposure assumptions.

Response 11. The revisions were made in accordance with EPA's comment.

Section 6.7.2.2, Risk Calculations, page 6-49

Reference to the average scenario must be removed from this section. A discussion of the average scenario is appropriate in the uncertainties section along with presentation of the data in an appendix.

Response 12. In a conference call on December 14, 1993, EPA and Olin agreed to leave the text as written.

Section 6.8, Remedial Goal Options, page 6-54

In this section and throughout the document the distinction between "likely future" and "hypothetical future" must be eliminated.

PRGs are not RGOs; see comments on Section 6.3.5 relative to the development of RGOs. RGOs must be developed for each scenario with pathways exceeding a 10^{-4} risk level or a HI of 1. For this site this would include both the child resident and the adult resident scenarios. The criteria for inclusion of individual chemicals should be those exceeding the 10^{-6} (not 10^{-4}) risk level and those with HQs exceeding 0.1. The site-specific risk equations must be rearranged to solve for the concentration in the development of RGOs; RAGS Part B should not be used.

Response 13. The RI document was edited to eliminate the words "likely future" and "realistic" as modifiers to "risks" or "exposure pathways." EPA believes these words imply judgement as to risk management, which should not be included in the risk assessment. In a conference call on December 14, 1993, EPA approved use of the word "hypothetical" in discussing future risks and exposure pathways.

The revisions directed by the second paragraph were made in accordance with EPA's comment.

Section 6.9.2.3, Data Evaluation, page 6-56

As stated previously, benzene should not be included in the contaminants of potential concern for sediments since it was not detected in this media.

Response 14. The revisions were made in accordance with EPA's comment.[1]

Section 6.9.5, Remedial Goal Options, page 6-66

This section contradicts Section 6.8 in that this section indicates that site-specific assumptions were used in the calculation of RGOs while Section 6.8 indicates that the procedures in RAGS Part B were utilized for the development of RGOs. Also, the PRG terminology should be eliminated from this section.

[1] Olin would like to note for the record that EPA had not "stated previously" that benzene should be removed. In the 6/8/93 comments on the Draft RI, EPA stated that it was inappropriate to include compounds that had not been detected in a given medium and requested that Olin provide the rationale for including benzene. Olin did so at a meeting in Atlanta on 7/1/93, and EPA (Akin and Keller) agreed that it was not productive to revise the RI to remove benzene.

Response 15. As noted in the response to number 1 above, site-specific assumptions were used. The section was revised to use RGO-terminology where applicable.

Table 6-1

Footnote 2 does not appear to make sense.

Response 16. Footnote 2 was reworded for clarity.

Table 6-2

It is unclear if the data in this table is surficial soil or sediments data.

Response 17. Table heading was revised to clarify that sediments are the topic.

Table 6-6

The format of this table should follow RAGS Exhibit 5-7. Also, data summary tables should be presented for all media included in this table.

Response 18. The revisions were made in accordance with EPA's comment.

Table 6-10

As stated previously, benzene should not be included in the contaminants of potential concern for sediments since it was not detected in this media.

Response 19. The revisions were made in accordance with EPA's comment.

Table 6-14

This table should reference the permeability constants.

Response 20. The revisions were made in accordance with EPA's comment.

Table 6-16

The adult resident and resident/trespasser ingestion rates should be 100 mg/day. The parameters for the child must be changed as follows: 200 mg/day soil ingestion, 6 year exposure duration, 15 kg body weight, and 2190 days averaging time.

Response 21. These revisions to the intake parameters for the adult and adolescent receptors were made in accordance with EPA's comment. Table 6-16 reefers to exposure to OU-2 surface soils, which was not evaluated for the child (0 to 6 years) per discussions with Julie Keller. EPA's suggested changes for the child intake parameters were made for the pathways for which the child receptor was evaluated.

Section 6 Tables

The child body weight, exposure duration, ingestion rates and noncarcinogenic averaging times must be changed as per the Table 6-16 comment.

Response 22. The revisions were made in accordance with EPA's comment.

Table 6-33

The referencing included in this table is unclear. As previously stated, this table should indicate which values were obtained from IRIS and which values were obtained from HEAST since the different sources receive different levels of EPA validation. As currently presented many of the values are referenced to both IRIS and HEAST; IRIS and HEAST do not duplicate the same toxicity values. It is unclear why a RfD was developed for lead; lead exposures must be addressed using the UBK model for children. It is inappropriate to add insignificant "0's" to slope factors and RfDs.

Response 23. The revisions were made in accordance with EPA's comment. (See note at the end of this attachment regarding changes to table numbers.)

Table 6-34

The presentation of 0.00E+0 values in this table should be eliminated. If these pathways are not complete for carcinogenic exposures NA should replace 0.00E+0. Per RAGS, all risk values and HI values should be presented in one significant figure. An additional summary table must be presented in addition to this table. This summary table will include the chemical specific risks for each chemical of concern in all pathways which exceed the 10^{-4} risk level or HI of 1 (chemicals which do not exceed 10^{-6} risk level or a HQ or 0.1 do not need to be included in this table).

Response 24. The revisions were made in accordance with EPA's comment. (See note at the end of this attachment regarding changes to table numbers.)

Table 6-35

In this table and throughout the document the distinction between "likely future" and "hypothetical future" must be eliminated. Footnote 1 should be removed. The title should be changed to Remedial Goal Options and all references to PRG should be eliminated. The limiting criteria in footnote 3 should be 10^{-6} not 10^{-4}

Response 25. The revisions were made in accordance with EPA's comment.

Figures 6-1 and 6-2

It is unclear why many of the pathways considered complete but insignificant in the previous version of this document are now listed as incomplete. Provide the basis for the change. The heading in this table should be edited to clearly state that the future child and adult resident are onsite residents.

Response 26. The basis was explained and accepted by EPA in a conference call December 14, 1993. The heading was revised to include the modifier "onsite."

Appendix N4

The subchronic headings should be removed from all tables in this appendix. Also, the presentation of "0.00E+0" as subchronic HIs should be eliminated.

Throughout this document numbers are often presented with insignificant digits added to the significant portion of the number resulting in a number that appears more significant than is appropriate. Insignificant zero values are often added to the right of the decimal in presenting RfDs and CSFs; RfDs and CSF should be presented in the form the reference cites. Per RAGS guidance all risk, HI and HQ values should be presented in one significant figure.

Include the tables and figures in this document in the pagination.

Response 27. Headings of "subchronic" were removed. The 0.00E+0 values were removed.

A footnote was added to each page to explain that the results from each calculation are accurate to only one significant digit.

In a conversation with Ken Lucas of EPA on December 10, 1993, he agreed that tables and figures did not need to be included in the pagination because only Section 6 was to be resubmitted and other existing sections did not include tables and figures in the pagination.

Note: In revising the RI as described above, Olin eliminated one table and added two tables. Table 6-31 was eliminated because it provided the time-weighted average body weight for the off-site 0-18 year child, which is no longer used. (Eliminating Table 6-31 caused the following renumbering: former Table 6-32 is now 6-31, 6-33 now 6-32, 6-34 now 6-33.) Table 6-5a was added to summarize the surface soil data. Table 6-34 was added to summarized the pathways and chemicals used to develop remedial goal options. Table numbers 6-35 through 6-57 did not change.

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DOCUMENT DESCRIPTION:

Letter from James Brown, Olin Chemicals, to Ken Lucas, EPA Region IV. Transmittal of the revised section of 6 of the Remedial Investigation Report. (December 21, 1993).

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